

Analysis of Brazilian program for universal access to electricity

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The 2000 Brazilian Demographic Census revealed more than eleven million inhabitants living without electricity. The program Luz Para Todos was created to provide universal access to electrical power throughout Brazil, especially to rural populations needing this public service. This study aims to evaluate the success of this public policy, to see if its original target was achieved, as well as the distribution of funding. Results reveal that more than three and a half million households were connected to power grids and indicate that resources were predominantly allocated to the North and Northeast, regions with the highest underserved populations.



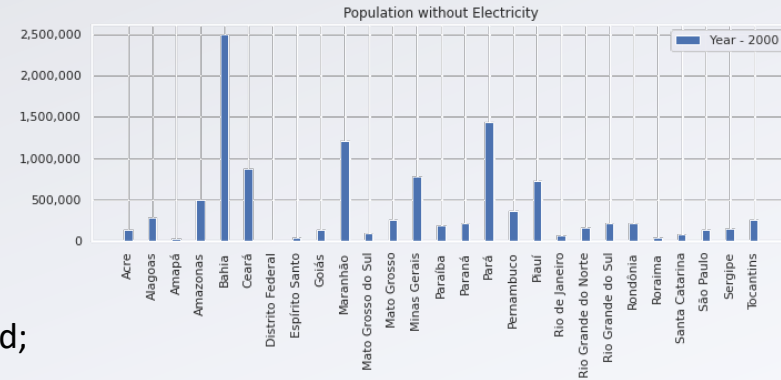
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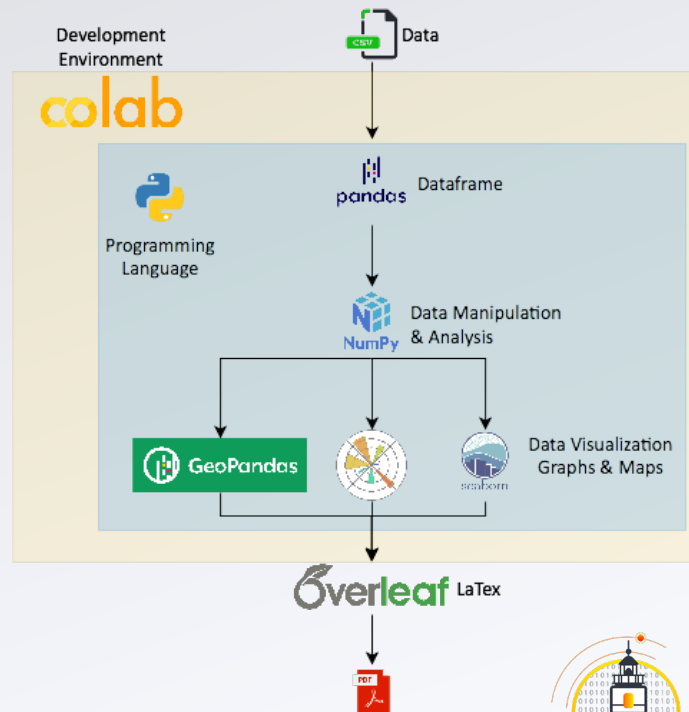
Problem and Data

- Choosing the Brazilian universal access to electricity program
 - social problem - 11 million people;
 - costs billions of dollars;
 - period covered 2004 to 2020.
- Data:
 - households connected to power grids and funding - Ministry of Mines and Energy;
 - 2000 & 2010 demographic census.
- Objectives:
 - when initial goals established were reached;
 - where the resources came from;
 - country, regions and states stats;
 - compare program results with 2010 census



Methods

- Data cleanup and selection;
- Data aggregation (population.csv, lpt1.csv and lpt2.csv);
- Data analysis (list, interquartile range, groupby and table);
- Data visualization (boxplot, lines, pizza, bar and heat map);
- Tools :
 - database - .CSV
 - development environment - Google Colab
 - programming language - Python
 - dataframe - Pandas
 - data manipulation - Numpy
 - displaying graphs and map representation – Geopandas , Matplotlib and Seaborn.
 - documentation - Overleaf LaTeX



Results and Conclusions

- 2000 - 11 million of 169 million without electricity ;
- 2.6 million households connected up to 2010;
- 2010 - 2.7 million of 190 million without electricity;
- Northeast and North Regions were prioritized;
- States of Bahia, Para and Maranhão had more households connected;
- 2020 demographic census has been postponed;
- 3,550,636 households connected to power grid;
- BRL 21.8B cost, approximately USD 3.99B;
- Future analysis, aggregating new data may generate predictive models and new goals.

